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branch of the glossopharyngeus and thus apparently not by a lateral line nerve proper. This anomaly has been described in certain teleosts, ganoids and elasmobranchs.

In studying serial sections through the head of a young dog-fish (*Squalus acanthias*) a condition was found which not only explained this apparent exception, but converted it into an additional support for the specific character of the lateral line nerve roots. The lateral line nerve to the trunk and the glossopharyngeus emerge from the medulla in about the same transverse plane, the former being dorsal to the latter. Close to their exit from the medulla a small intracranial bundle of fibres becomes detached from the lateral line root and fuses with the glossopharyngeus. This bundle could be still followed as a component of the latter, however, owing to the greater caliber of its fibres. When the glossopharyngeus emerges from the auditory capsule the bundle in question soon becomes detached and could be traced to a canal organ. Undoubtedly the fibres, described by Kingsbury, which the glossopharyngeus in *Amia* receives from the root of the lateral line nerve, would be found to have a similar destination if traced in this way—as indeed Kingsbury himself has suggested.

H. E. CRAMPTON,
Sec. pro. tem.

THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy of Science of St. Louis on April 18, 1898, eighteen persons present, Mr. Carl Kinsley read a paper on 'Series Dynamo Electric Machines.' He showed, by the results of tests of machines, that the relations between electromotive force, current and speed can be represented by a surface. This is easily done, since for widely different currents, and for both dynamos and motors, the total induced electromotive force is strictly proportional to the speed when the current is constant. He stated that Frölich's empirical equation can be used to represent large portions of this surface, as suggested by Professor F. E. Nipher.

It was stated that the way in which a series motor will operate from a series generator can be predetermined; and, for cases reported, it was shown that computed results throughout

the complete range of working conditions gave an average agreement with observed results to within 0.05 per cent. The method explained in the paper enables an engineer to design such a power transmission circuit accurately from shop tests of the machinery, and to operate the series motor at constant speed under all loads.

It was shown that the resistance of the generator does not vary with the speed. This makes it possible to use a small series generator as a speed indicator and so obtain instantaneous values of engine speeds from the volt-meter or ammeter readings, if the resistance of the outside circuit is kept constant. The practicability of this method of determining engine speeds was fully shown by the results reported in the paper.

Professor J. H. Kinealy made some informal remarks on the ventilation of schools, and by means of a number of stereopticon views showed the different methods adopted for supplying the air required to the different rooms of schoolhouses.

Four new members were elected.

WILLIAM TRELEASE,
Recording Secretary.

NEW BOOKS.

Il Codice Atlantico. LEONARDO DA VINCI. Milan, Ulrico Hoepli; New York, Gustav Stechert.

Studies of Good and Evil. JOSIAH ROYCE. New York, D. Appleton & Co. 1898. Pp. xv+384. \$1.50.

Alternate Currents in Practice. FRANCIS J. MOFFETT. London, Whittaker & Co.; New York, The Macmillan Company. 1898. Pp. ix + 376. \$5.

Lectures on the Geometry of Position. THEODORE REYL; translated by T. F. HOLGATE. New York, The Macmillan Company. 1898. Part I. Pp. xix + 248. \$2.25.

A Treatise on Magnetism and Electricity. ANDREW GRAY. London and New York, The Macmillan Co. 1898. Pp. xv + 947. \$4.50.

The Development of the Child. MATTHEW OPPENHEIM. New York and London, The Macmillan Co. 1898. Pp. 296. \$1.25.